


# WELL DEVELOPMENTS



## BOARD MEMBERS

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Laurence Siroky, DNRC Member

No. 26

Board of Water Well Contractors

March 2001

## CONTINUING EDUCATION

Here is a list of the approved continuing education classes that are sponsored by the Montana Environmental Training Center for the next four months.

Please contact Jan Boyle at 406-771-4433 for additional information and to register for the continuing education classes. Contact your suppliers for other upcoming schools in your area.

Several contractors have said that they are unable to attend any continuing education due to their busy schedule. Rule 36.21.413A requires four hours of board-approved training annually. There are no exceptions; however, the Board of Water Well Contractors (BWWC) may approve a waiver for good reason if the licensee agrees to attend eight hours of classes in the next license year. The waiver is given for reasonable excuses, as determined by the board, and will not be granted for consecutive years.

As long as the waiver policy is not abused, the board will continue its liberal policy of approving local first aid, CPR, welding, sanitation, electrical, safety, and related training to meet this requirement. However, if you are not on the waiver list or have not made arrangements with the board's office, your license will be "inactive" even if you have paid renewal fees

## SCHEDULE

### Hands-on Pump Operations Workshop

March 7-8, 2001 Missoula

### 9th Annual Spring Water School

March 21-23 Billings

### Chlorination

April 10, 2001 Great Falls  
April 12, 2001 Butte

### Hazardous Materials Awareness

April 26, 2001 Missoula

### Small Water Operations

May 23-24, 2001 Wolf Point

### Call Before You Dig

June 26, 2001 Libby  
June 28, 2001 Polson

Most training schools put on by suppliers and manufacturers begin in the spring of the year. Contact your supplier for upcoming schedules.

and have a bond in place. "Inactive" means that you cannot drill water wells until you have met all the requirements for license renewal.

## DISINFECTION

Here is the Administrative Rule of Montana (ARM) 36.21.662, about disinfection.

(1) Sand and gravel used in filter pack wells shall be thoroughly bosed or sluiced with water, and shall be disinfected with a solution containing at least 50 parts per million chlorine before being

placed in the well. All water introduced into a well during construction shall be clean and potable. The well and its equipment, including the interior of the well casing, shall be thoroughly swabbed and cleaned to remove all oil, grease, and foreign substances upon completion of the well's construction.

Following the completion of a well, and again after the pumping equipment has been installed, a well and its equipment shall be disinfected by thoroughly agitating and mixing in the well a solution containing enough chlorine to leave a residual of 25 parts per million throughout the well after a period of 24 hours.

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We have had many requests to repeat "Helpful Hints" printed in newsletters of the past three years. We have selected the following topics to be repeated in this newsletter.

### ARTESIAN WELLS

Nearly all water wells are under some pressure after drilling and could be termed "*artesian wells*." "*Flowing wells*" are simply artesian wells that have enough pressure for water to flow out of the top of the casing. You are required to control a flowing well, which means capping it and installing a shutoff valve to shut it off completely. If it flows around the casing, you must pressure grout it until it is controlled or stops flowing. This is not easy and usually is a trial-and-error procedure. You can pressure grout inside the casing or blow a hole down outside the outer casing with air and water before grouting. You can use different setting ingredients with the grout. Cement grout usually works best with some quick set gels, calcium, or other products recommended by manufacturers. Plugs set above the flowing zone are often used. In any event, you must control the flow, and thereafter it is up to the well owner to work out the amount of the beneficial use with the DNRC regional office.

### COMPLAINTS

Everyone gets complaints. BWWC receives nearly 300 complaints annually, ranging from drillers using foul language, or destroying a lawn, to actual well construction violations. If you can't satisfy the well owner and it looks like trouble, it is wise to inform the BWWC office as to the nature of the complaint,

so that it is not a total surprise. BWWC can likely resolve the complaint before it gets to be a personal vendetta.

Most complaints occur because of a financial misunderstanding. The board does not and cannot interfere in those business dealings. The board does get involved, however, if the allegation is about improper well construction methods.

### WATER WITCHING

On occasion, you will be asked to drill exactly where an owner had the well witched. It doesn't help either to argue or to agree. Your basic job is to drill where the owner wants, because the well location is, within limits, his responsibility. The limits are basically safety from utilities and state requirements for maintaining distances from septic tanks, sewer lines, etc. Drillers get into trouble when there is not enough water or the well is dry. Don't compound the problem by arguing about water witching or by promising water. Remember your responsibility is to drill the hole properly and develop the water that you encounter.

### MIXING CUTTINGS WITH BENTONITE

In the good old days, drillers used anything from mud to inner tubes to keep the hole from caving and keep circulation until the casing was set. Bentonite was often mixed with anything, including drill cuttings, because it was commonly used in the oil fields and with mud rotary rigs. Older, experienced drillers still want to use a mix of cuttings and bentonite to seal the upper 18 feet of a water well or to puddle the mix behind driven casing.

However, Montana's rules prohibit mixing cuttings with bentonite.

Why? Because during the 1980s much testing of sealants was done. The results were variable, but seem to indicate that, although neither neat cement nor pure bentonite was perfect, they were indeed the best under most circumstances. Recent testing indicates that mixing cuttings with bentonite does not substantially affect hydration and sealing; however, under certain high pH and temperature conditions, bentonite does not hydrate effectively, particularly to shut out hydrocarbons.

So, there is no sealant that is best under all conditions. Pursuant to ARM 36.21.634(33), you are required to use a pure sealant of bentonite clay grout, neat cement grout, or neat cement grout with up to 5 percent, by weight, of bentonite clay.□

### QUOTES FOR THE LIGHTER SIDE

#### ATTITUDE

*A positive attitude will not solve all your problems, but it will annoy enough people to make it worth the effort.*

---Herm Albright

#### BOSSSES

*If you think your boss is stupid, remember, you wouldn't have a job if he was smarter.*

---Albert Grant

#### RISK

*If the creator had a purpose in equipping us with a neck, he surely meant us to stick it out.*

---Arthur Koestler

## HOW TO FIND TOWNSHIP, RANGE, AND SECTION FROM GPS READINGS

Many people responded to the article titled "Progress on GPS Systems for Well Logs" in the last edition of this newsletter. This article explained that the Natural Resource Information System (NRIS) mapping tool called TopoFinder could be used to convert Global Positioning System (GPS) coordinates to township, range, and section (TRS). However, it did not explain how to find the quarter of a quarter of a quarter section for each position. The following



instructions will assist you in this task from start to finish.

**Step 1.** Get your GPS position. This can be done with a basic, handheld GPS unit. These typically cost a few hundred dollars and give readings

with an accuracy of + or - 100 feet. Higher accuracy units are available at a very high cost. However if you only need to

locate the position to a quarter of a quarter of a quarter section (10 acres), the basic unit will work fine.

**Step 2.** On your home or office computer, go to [www.nris.state.mt.us/gis/gis.html](http://www.nris.state.mt.us/gis/gis.html) (You can "bookmark" this address for easy access later.) This will bring you to the NRIS home page. Scroll down to where it says "USGS Topographic Maps", click on it, and then click on the following: "Topo Finder", and "Search Tools" on the figure called "Montana Topographic Map Finder." Enter the latitude and longitude information on the next figure. You can enter this as degrees, minutes, and seconds or as degrees and decimal minutes. Click on "Locate D/M/S" or "Locate D/M.mm". The TopoFinder will plot the position as a red X on a U. S. Geological Survey (USGS) quadrangle (quad) map. The TRS location will be listed in the TRS position box.

**Step 3.** Adjust the size of the strip map so that you can see the

entire section in which the position is located. With map controls, you can zoom in or out and change the map size. You can go to print controls and adjust the orientation so that it will print in landscape. Print the map.

**Step 4.** Use a pencil and ruler to divide the section into four equal quarters. Divide each of the four quarters into four equal quarters. Divide only the square that contains the red X into four quarters. The square that now contains the red X is the quarter of a quarter, of a quarter section. This position can now be placed in front of the TRS location from Step 2 to make the full description of the location.□

### WEB SITES TO BOOKMARK

The Internet is a huge information bank, and finding what you are looking for can be time-consuming and frustrating. Provided below is a list of web sites that relate to BWWC.

#### **BWWC NEWSLETTER**

<http://www.dnrc.state.mt.us/wrd.htm>  
This site provides the latest BWWC newsletter, *Well Developments*.

#### **ADMINISTRATIVE RULES (ARM)**

<http://www.dnrc.state.mt.us/wrd/AdminRules.htm>

This site provides the Administrative Rules of Montana for BWWC.

#### **MONTANA CODE ANNOTATED (MCA)**

<http://www.dnrc.state.mt.us/wrd/MontanaCodesAnnotated.htm>  
This site provides the Montana statutes for BWWC.

#### **WELL LOG REPORT FORMS**

<http://www.dnrc.state.mt.us/wrd/home.htm>

This site contains Well Log Report Form 603 for drillers' use only to record wells drilled.

## HISTORICAL BOARD MINUTES

The twenty-seventh meeting of the Water Well Contractors Examining Board was held Thursday morning, August 28, 1969, in Mr. Brinck's office in the Board of Health Building.

The meeting was called to order at 9:00 a.m. by Mr. C. W. Brinck, Chairman of the Board. Those present were Mr. C. W. Brinck, Mr. Everett Darlington, Mr. Wesley Lindsay, and Mr. Ernest Bond, Technical Advisor. Mr. W. C. Hardy, state Water Well License Inspector was also present.

The minutes of the previous meeting were approved as submitted.

Mr. Hardy gave his report. He had been to Silver Gate as there was an unlicensed water well contractor from Wyoming drilling wells in that area. It is doubtful he will return to drill wells as a warrant was issued for his arrest and the bond set at \$200, which is still pending. Mr. Cushman, an unlicensed water well contractor from Idaho received the contract to drill 27 water wells on the

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**HISTORICAL MEETING**  
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Indian reservation close to Ronan. After a trip to Polson and Ronan, Mr. Cushman came in and took the examination. Mr. Hardy also reported there are many of the signs that do not meet the specifications set forth in the RuLes and Regulations.

The Board went on record commending Mr. Bond for the first issue of the quarterly News bulletin for Montana water well drillers, *The Montana Driller*. It is very informative and should be a great help to the drillers.

Mr. Bond said a possible project he is considering is corrosion in the well and the cause. He said he would welcome any ideas or suggestions on the bulletin.

Mr. Darlinton made a motion to the Water Well Contractors Examining Board to transfer \$100 per year for this biennium to the Council of Natural Resources for support of a coordinative office. Mr. Lindsay seconded the motion, and it was passed by voice vote.

Mr. Lindsay and Mr. Bond are to write new examinations. Mr. Lindsay said he thought there should be more

questions on construction and safety and not so much on drilling equipment.

Mr. Brinck was unanimously re-elected as Chairman of the Board, and Mr. Lindsay was unanimously elected Vice Chairman.□

**DISINFECTION**  
*(continued from Page 1)*

*(2) The responsibility for the chlorination of the well shall be agreed upon in writing by the parties to the drilling agreement.*

*3) The contractor shall clean and disinfect the drilling equipment after drilling in an area of known or suspected con-tamination or areas*

*of iron bacteria problems.*

Wells that contain water with high iron or sulphur content may require more chlorine. Chlorine pellets (calcium hypochlorite) and granules will give up to a 50 parts per million (ppm) chlorine residual. To produce a 50-ppm result, use about one ounce of pellets for 100 gallons. One ounce of granules is about the same as 35 pellets per 100 gallons. It is necessary to flush the well and system within 36 hours to prevent corrosion that results from using high levels of chlorine. Bacteria growth can be contained if you sanitize the well annually.□

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